Guide To New Construction
RESIDENTIAL

Provided by Metro Water Services

Revision Date: March 2004

METRO WATER SERVICES

The Metropolitan Government of Nashville and Davidson County, Tennessee

This handbook is provided for informational purposes only. It is not intended to be a legal document.

This handbook is provided for informational purposes only and is not intended to be a legal document. Information is current as of the revision date that appears on the front cover. For more recent updates and amendments, please visit the Metro Water Services Web site at www.nashville.gov/water or call MWS at 615-862-4600.

table of contents

introduction

Dear Customer:

We are pleased to provide this guide to introduce commercial customers to our department's policies and procedures regarding new residential construction. Metro Water Services is a department of the Metropolitan Government of Nashville and Davidson County that provides service to more than 155,000 water accounts and more than 166,000 sewer accounts.

Our department supplies drinking water to customers in Davidson County as well as portions of Rutherford and Williamson Counties. Two water treatment plants serve this community: the K.R. Harrington and the Omohundro Water Treatment Plants, with a combined capacity of 180 million gallons of water per day. The drinking water is conveyed by a distribution system consisting of more than 2,700 miles of water main, with our largest pipe being five feet in diameter.

Wastewater is treated by one of three wastewater treatment plants: Central, Whites Creek and Dry Creek. These facilities serve customers in Davidson and portions of Sumner, Robertson, Wilson, Rutherford, and Williamson Counties. The Central Wastewater Treatment Plant, our largest, is able to treat 330 million gallons of wastewater per day. The Dry Creek and Whites Creek Wastewater Treatment Plants have a combined capacity to treat more than 129 million gallons per day. Our wastewater collection system has more than 2,700 miles of piping, the largest of which is 16 feet in diameter. On an average day, we treat more than 150 million gallons of wastewater.

Responsibility for Nashville's stormwater management was transferred to MWS from the Department of Public Works in 2002. The Stormwater Division utilizes both educational and regulatory initiatives to improve water quality by reducing the amount of pollutants entering rivers and streams as a result of stormwater run-off. The division reviews plans for new development projects for compliance with Metro stormwater regulations, issues grading permits, and inspects construction sites for proper erosion control measures. It is responsible for maintenance of the storm sewer system, construction of stormwater capital improvement projects, and compliance with Metro's Municipal Separate Storm Sewer System Permit.

THE MISSION OF METRO WATER SERVICES IS:

To provide drinking water, wastewater treatment and stormwater management services to our community so we can enjoy a vital, safe and dependable water supply and protected environment.

We hope this guide will make it easier for you to do business with Metro Water Services and answer many of your questions. Telephone numbers and Web site references are provided throughout for additional information. Please contact us with any questions or issues not addressed in this guide.

Metro Water Services encourages the involvement of our customers. The Trades Advisory Council offers plumbers, engineers, contractors and developers a unique opportunity to get involved. This group reviews changes in policy that affect customers that want to connect to our infrastructure and makes suggestions to help make it easier to do business with the department. If you would like to get involved or request more information, please contact the Permits Office of MWS at 862-7225.

Thank you for allowing us to serve you.

Scott Potter
Director

processoverview

Step 1»
Submit request for water and sewer availability to MWS Development Services

Step 2»
Development Services performs sewer capacity study

Step 3»
Development Services sends letter outlining sewer capacity fees and requirements to MWS Permits Office and customer

Step 4»
Pay sewer capacity fees to MWS Permits Office

Step 5»
Development Services sends sewer availability letter to customer including water availability information as appropriate

Step 6»
Is a water or sewer extension necessary?
- ❍ No? Skip to step 14
- ❍ Yes? Continue with steps 7-13

Step 7»
Submit 2 sets of construction plans and design report to MWS for approval by MWS

Step 8»
Pre-construction meeting is held

Step 9»
Apply to MWS Permits Office for construction permit

Step 10»
Construct public water and/or sewer extensions (including all water and sewer service lines) to MWS specifications as directed by MWS inspector or request MWS inspector to schedule run to curbs (water only) after completion of the water main

Step 11»
Does developer request water service taps by Metro Water Services?
- ❍ No? Utility contractor makes taps in accordance with requirements of Tap Policy
- ❍ Yes? Continue with steps 12-16

Step 12»
MWS approves construction and completes run to curbs as appropriate

Step 13»
Deliver plat and transfer slips to MWS Permits Office

Step 14»
Apply for water and/or sewer tap and/or set water meter permits

Step 15»
Pick up water meter at MWS Customer Service Center

Step 16»
Install water meter and water meter box

PROCESS END
Once all items are installed correctly and pass inspection, MWS Permits Office releases its portion of the use and occupancy (U&O) permit

1 »
Availability Request

All proposed residential developments within the Department's water or sewer service areas require a determination of the availability of sewer and/or water services.

Developers and property owners, or their representatives, should contact Development Services to determine water and sewer availability. Requests for water and sewer availability may be made via letter or using the Request for Water and Sewer Availability form (Appendix 1).

The following information must be included:

- Location of the property with Tax Map and Parcel number
- Total acreage of the site
- Intended type of development of use of the property, along with total square footage of proposed building
- Projected wastewater flow in gallons per day (GPD)
- Subdivision development plan with finished floor elevations

Submit the request letter or form, development plan and application fee of $50.00 (check payable to: Metro Water Services) to:

Metro Water Services
Development Services
Attn: Availability Request
1600 2nd Ave. North
Nashville, TN 37208

For assistance or additional information, please contact MWS Development Services at 615-862-4578.

2 »
Sewer Capacity Study

Upon receipt of a request for sewer availability, Development Services will perform a sewer capacity study based on the projected wastewater flows for the proposed development in gallons per day (GPD). Estimated sewer usage is calculated at 350 gallons per day (gpd) per single family dwelling.

3 »
Fees and Requirements

Upon completion of the sewer capacity study, Development Services will send the customer a letter outlining sewer capacity fees and any special conditions or requirements for providing water and/or sewer service to the development.

Capacity fees are currently assessed at $500 per unit of flow. A unit of flow is equal to 350 gpd per single family dwelling. This study usually takes 15 working days to complete, depending on the size and complexity of the proposed development.

For assistance or additional information, please contact the MWS Development Services Office at 615-862-4578.

4 »
Sewer Capacity Fees

Bring a copy of the letter outlining sewer capacity fee and sewer requirements to the MWS Permits Office and pay sewer capacity fees. A minimum of 30 percent of the sewer capacity fees due must be paid within 60 days of the date of the sewer capacity fee letter to reserve sewer capacity. This 30 percent payment reserves sewer capacity for one year from the date of the availability letter.

Note: If construction of the proposed project has not begun within one year, or the second payment equaling 55 percent of the total sewer capacity fees due has not been paid, the amount paid will be forfeited and the developer must resubmit request for availability.

5 »
Availability Letter

After payment is made, an availability letter will be sent to confirm the point of connection for the sanitary sewer and the:

- Water service elevations
- Water main size
- Sewer capacity purchased

The statement of sewer and water availability is effective for one year from the date of the availability letter. If, after approval of sewer and water availability, construction has not begun within the established time period, a renewal of the availability statement will be required and all applicable departmental regulations and fees in force at that time will be imposed.

6 »
Water and Sewer Extension

Is a water or sewer extension necessary?

❍ No? Skip to step 14

❍ Yes? Continue with steps 7-13

7 »
Construction Plans

If a proposed development requires the extension of a public water main or sewer line, the owner or developer shall retain the services of a State of Tennessee Professional Engineer to prepare construction plans.

Two sets of plans must be submitted to Development Services. The engineer's stamp must be affixed to the proposed plan. Plans will be reviewed and returned with any necessary revisions.

A letter of credit will be required if a plat is not involved. The amount of the letter of credit will be determined by MWS Development Services.

For additional information, call MWS Development Services at 615-862-4574.

Plan Submittal Requirements

MWS has adopted the following general guidelines for all proposed water and sanitary sewer system extension plans. These guidelines are intended to aid in the preparation of construction plans and are not intended to supersede standards of the Tennessee State Health Department criteria. These guidelines should not be considered as all-inclusive requirements. Where circumstances warrant, additional information may be required. A Construction Plan Review Checklist is provided in Appendix 2.

Schedule

Plans must be submitted at least 30 days prior to the date on which action by MWS is requested. In the case of pump stations and other special circumstances, a longer review period may be required. Plans will not be accepted for review until a minimum of 30 percent of capacity fees due have been paid.

Initial Submittal

The initial submittal shall consist of two sets of construction plans (paper) and two copies of the engineering design report as well as electronic drawing files in *.dwg format. Electronic files shall be in AutoCAD release 14 to release 2002. Plans are to be prepared in or converted to model space, and no paper space drawings will be accepted. Electronic drawings should be adjusted horizontally and vertically to NAD 1983 Tennessee State Plane Coordinate System. Electronic drawings shall not contain special fonts or attributed data with the files; standard Autocad fonts are to be used in all cases.

When a project is to be built in phases, an overall plan of the entire project shall be submitted with the first phase. Future phases will require two sets of construction plans, electronic files and any changes to the overall plan. Should additional phases be added or if changes in the layout are required, an update to the overall drawing shall be submitted at the earliest date possible.

Engineering Design Report

The engineering design report shall contain the following information:

- Topographic map indicating the area to be served indicating total acreage of the proposed development and calculations supporting all water main sizing, including fire protection requirements from the Metro Fire Marshall's office.
- Current and proposed zoning/density for the area.
- Compare service elevation with proposed buildings and pressure system information available from Development Services.
- Total number of units for the proposed development.
- Water usage of the proposed system, both present and future, from the development and adjacent areas. Show calculated total and peak flows of the proposed development. Peak factors used for the flow calculations shall be as provided by Development Services. Normally, a peak factor ranging from 2.5 to 4 shall be used in the calculations. Calculate the projected ultimate usage for the area based on Metropolitan Planning Commission (MPC) projections as well. Proposed usage will be based on State design criteria and projections of population density, for a minimum of a 20-year period, based on the MPC subarea plans.
- Compare with the MWS Master Water Plan for the area of proposed development and incorporate any required improvements into the project. Where two or more alternatives exist for providing public facilities, each of which is feasible and practical, a summary of the alternate plans shall be provided with reason for selecting the one recommended, including financial considerations of the options.
- General system layout of the development and impact on the existing systems.

State of Tennessee Requirements for Connections to Public Mains

In addition to department requirements, all state health department requirements in effect at the time of construction shall be followed. In case of conflict, the more stringent requirement shall apply to the proposed construction.

Online resources for additional information regarding state requirements:

Sewer: www.state.tn.us/environment/gwp/
Water: www.state.tn.us/environment/dws/

Construction Plan Design Guidelines

Plans will be reviewed and returned to the engineer with any necessary revisions indicated. Format and content of the plans shall be as follows:

- All plans shall be stamped by a Tennessee Licensed Professional Engineer.
- A cover sheet shall be made a part of all plans, and shall incorporate a location map on an approximate scale not less than 1″ = 1,000 feet, the name of the project and the names, addresses and telephone numbers of the developer and the engineer.
- Plans shall be drawn on standard 24″ x 36″ sheets. Note: No other size will be accepted.
- Standard plan notes (see Appendix 3) shall be shown on all plans submitted for review.
- Water lines shall be shown on the overall plan. Indicate all conflicts with other utilities and label all sleeves, valves, fire hydrants, proposed service locations, etc.
- Plans shall be drawn on a 1″ = 50 feet scale and the profile shall be drawn on a scale of 1″ = 50 feet horizontal and 1″ = 5 feet or 1″ = 10 feet vertical. In areas where the topographic features are dense, detail sheets may be required on a scale of 1″ = 20 feet, with the clearance between the proposed main and existing structures clearly defined and noted.
- All plans shall include a Bench Mark based on USGS Datum and referenced to State Plane Coordinates.
- Show all topographic features such as driveways, pavement, sidewalks, right-of-ways, property lines, storm drainage structures, etc.
- Show all property lines on the plans as well as map and parcel information for each parcel. Where possible, show lot numbers and/or street addresses.
- All plans must show the locations of the existing utilities, including but not limited to gas lines, underground utility conduits, power and telephone poles, water mains, sanitary sewer lines, storm sewers, etc., with measurements and/or details of proposed clearances of same.
- The direction of North should be clearly shown on all plans.
- Careful attention to development sites and finished floor elevations is necessary to insure adequate water pressure. The engineer is responsible for providing accurate elevation data and determining finished floor elevations adequate for service.
- All water mains shall have a minimum of 30 inches cover in paved areas.
- All water meters installed must be equipped with electronic registers and MXU device.
- Public water mains on private property or in alleys are not normally approved.
- When crossing under an interstate highway or railroad, a minimum size carrier pipe of 18 inches will be required (Steel).
- A minimum of 10 feet of horizontal clearance between water mains and sanitary sewers shall be maintained whenever possible. When the 10 feet of separation is not possible, a minimum vertical separation of 18 inches shall be maintained. When the vertical separation cannot be maintained, the sewer must be built to water main specifications. Whenever sewers must cross under water mains, the sewer shall be laid at such an elevation that the top of the sewer is at least 18 inches below the bottom of the water main.
- A preliminary subdivision plat that has the Metro Planning Commission's stamp of approval must

accompany the initial plans submittal and with all proposed subdivision section or phase lines clearly defined.

- Water mains proposed to serve property where the serviceability of a lot or residence is questionable will indicate the service elevation for each lot or residence, where this condition exists and must be clearly indicated on the plan and profile. On lots where the structure will be above the service elevation, 20 P.S.I. must be provided at the street with the lot served by a privately-owned and maintained booster pump.
- A connection must be provided for each parcel or proposed lot. The tap location will be shown on the plans and an appropriately sized service line extension to the curb indicated, where applicable, for each parcel.
- The following agencies may also require approval of the construction plans:

  Tennessee Department of Health (required for sanitary sewer)

  U.S. Army Corps of Engineers

  Nashville Gas

  Nashville Electric Service

  Metro Public Works

  BellSouth

  Tennessee Valley Authority

  Tennessee Department of Transportation

  Railroads

  Comcast Cable

  Private property owners

- Easement agreements with owners of private property involved with the construction must be obtained and a right of entry notification executed before construction begins. (See additional information regarding easements, below.)

Recording Easements

Easements for sanitary sewer extensions may be documented in two ways:

1. *Easement Document on Standard Metro Form*
   Submit to MWS Development Services and include map and parcel number, legal owner's name, instrument number or deed book and page number, legal description of the easement, scale drawing or exhibit/map showing the easement, and notarized signature of owner. MWS must approve and will record the easement at the developer's expense.
2. *Recorded with Subdivision Plat*
   A preliminary development plan of the subdivision, along with a letter of intent, must be provided at the time of plan submittal. This plat must clearly define the easement to be recorded. A licensed Professional Engineer or Registered Land Surveyor will stamp the final subdivision plat assuring that the easement is recorded, as shown on the preliminary plat.

Easement Requirements

Public Facilities

When constructing public sanitary sewer lines or water mains outside a public right of way, an easement must be provided and conveyed to the Metropolitan Government. Documentation of the easement should be submitted to MWS Development Services, which will approve and record it with the Register of Deeds for the county in which the property is located.

General Requirements	
Minimum width permanent easement	20′ for all sizes
Minimum total width	30′ (20′ permanent + 10′ temporary)

Additional Requirements
Sewers – 8″ through 24″

Depth	Easement Width
0′ to 5′	30′ (Minimum 20′ permanent + 10′ temporary)
5′ to 7.5′	35′ (Minimum 20′ permanent + 15′ temporary)
7.5′ to 10′	40′ (Minimum 20′ permanent + 20′ temporary)

For requirements for larger diameter lines, please contact MWS Development Services at 615-862-4574.

Redevelopment of Previously Developed Property

All service line renewals will be the responsibility of the developer for both water and sewer. MWS will not renew old existing services on properties being redeveloped. It shall be the responsibility of the developer to investigate, evaluate and determine if the services should be renewed. All costs will be at the developer's expense. Should the redevelopment of property require the relocation or abandonment of existing easements that contain facilities owned and operated by MWS, the approval of the Metropolitan Planning Commission and subsequent passage of an approving ordinance by the Metro Council is required. These approvals must be completed prior to the demolition of the old easements and facilities. The relocation, inspection and acceptance of the relocated facilities should take place prior to the legislation being passed. As significant time is required to complete this activity, developers should provide the required information to MWS Development Services as early as possible to avoid delays to the project.

Once reviewed and all review comments have been incorporated, submit 10 paper sets of plans for approval. Stamped, approved plans will be distributed to appropriate parties for their use.

8 »
Pre-Construction Meeting

After all approvals and easements required are obtained and the application for public utility extension has been secured, a pre-construction meeting will be held. The project engineer, developer and contractor are required to attend the pre-construction meeting conducted by the MWS Senior Inspector and Project Inspector. The contractor shall provide sewer construction cut sheets in acceptable MWS format where applicable. The agenda for the meeting includes construction requirements and any questions on materials and any other specific concerns relating to the project.

All water and sewer related construction shall be inspected by MWS. The builder or developer shall reimburse MWS for the cost of inspection. MWS will prepare the deeds of conveyance and send them to the developer, who is required to return the signed deeds to MWS.

9 »
Construction Permits

Upon conclusion of the pre-construction meeting, the permit for extension will be signed by the licensed municipal utility contractor or licensed master plumber involved at the Permits Office at the Howard School Building. Construction may commence after the permit is signed.

Temporary meters for water main construction

If water service is required for construction of the new mains, a temporary meter may be issued for use on a public fire hydrant. Un-metered use of Metro fire hydrants is strictly prohibited. Please call the MWS Customer Service Center at 615-862-4600 to request a temporary meter for use on a fire hydrant.

10 »
Water/Sewer Extension Construction

Construct public water and/or sewer extensions, including all water and sewer service connections, to MWS specifications as directed by MWS inspector or request MWS inspector to schedule run to curbs (water only) after completion of the water main.

A licensed municipal utility contractor (for sewer or water) or licensed master plumber (for water) is required to perform all proposed public utility extension work. Contractors shall construct all water and/or sewer facilities according to MWS specifications, in conformance with applicable Metropolitan Code.

To request copies of the specifications, contact MWS Engineering Records at 615-862-4564.

11 »
Taps and Tap Policy

Does developer request taps by MWS?

- ❍ No? Licensed municipal utility contractor or licensed master plumber makes taps in accordance with requirements of Tap Policy below
- ❍ Yes? Continue with steps 12-16

Tap Policy

Contractor will make a service tap to create a sample point on new mains after tapping, sleeve and valve (TS & V) and construction tap on existing main has been made. The contractor will run a copper jumper, complete with a double detector check valve, to the main line. (The TS & V will remain closed at all times during this process.) Wet taps are then allowed to be made by the contractor for ¾″ and 1″ service lines on the new line only. Copper service lines should be run to the disinfected route along the main. Disinfection procedures will remain the same and MWS will

conduct pressure test on all services and mains. Each service is flushed at the curb stop to insure the service is open at the corporation on the main. A sample is taken on the entire distribution system in compliance with AWWA requirements and restrictions.

Additional guidelines include:

- Curb stops 18 inches inside property line (copper service)
- Curb stops in center of lot on single family homes
- Plans to include location of driveway
- Center driveway location of services using distance from corner pin

No permits will be released until as-builts and testing is completed.

12 » Taps and Run To Curbs

Taps and/or run to curbs must be scheduled a minimum of two days in advance.

Upon completion of the mains, the MWS Inspector shall contact MWS Permits and schedule run to curbs. MWS System Services will complete run to curbs usually within two days of request. Note that weather delays may extend this schedule.

13 » Plats and Transfer Slips

Plats and transfer slips should be delivered to the MWS Permits Office. Connections for individual lots may be permitted and constructed by the builder/developer upon approval of all water and/or sewer construction. Signed transfer slips for water and/or sewer and copy of the final recorded plat are required prior to issuing connection permits.

Request for reimbursement may be made in lieu of providing transfer slips. For additional information, contact the MWS Permits Office at 615-862-7225.

14 » Service Application/ Set Meter Permit

Apply for water and/or sewer tap and/or set water meter permits. MWS will automatically schedule initial field inspection 10 working days after permit is issued

Tap fees for public water and/or sewer mains built by privately funded extensions

Title 15 of the Metropolitan Code defines developer's equity as the cost of construction of the public main extension. This amount of equity may be used to offset any required tap fees up to the cost of the public extension. The cost of each tap is deducted from the amount of the developer's equity existing for the public main extension (both water and sewer).

After the construction of a privately funded public water main extension, run-to-curb connections for individual lots are constructed. The developer must have previously provided a signed transfer slip for each lot (separate water and sewer as applicable) and a plat that shows the general arrangement of subdivision, lot numbers, water main sizes and locations prior to permitting of individual connections. The transfer slip accounts for the cost of each tap fee, debited against the amount of the developer's equity.

Tap and/or capacity fees are due at the time of application for the sewer connection permit for the individual lot. For an example of the service permit application, see Appendix 4.

Service applications/set meter permit

A licensed master plumber must bring completed service application (Appendix 4) to the Permits Office for set meter permit issuance. Service application information will be used to establish customer account for billing of water. Sewer billing will automatically be added to account 90 days later.

15 »
Residential Meters

For a residential connection, the plumber will be issued a 5/8″ water meter including the AMR equipment for installation. Larger residential and/or irrigation meters will be furnished by the property owner at their expense. All meters installed shall meet the AMR requirements included in Appendix 5.

Residential meters may be obtained at MWS Customer Service Center, located at 1700 3rd Ave. N. Approved additional meters may be purchased from a local distributor.

For more information, please contact MWS Customer Service at 615-862-4600.

16 »
Meter and Meter Box Installation

For all meter installations, the property owner, contractor or licensed plumber shall furnish the meter box. The meter box shall meet current MWS specifications. Service connections within meter box must be flared connections. (No soldered joints or plastic connections will be accepted.) Meter and service line will be a minimum of 24″ not to exceed 28″ to top of finished grade. MWS will automatically schedule inspection 10 working days after permit is issued.

Call the MWS Permits Office at 615-862-7225 to request final inspection of the meter and meter box once final grading has been completed. Any re-work that is necessary will be directed by the customer service inspection unit, which examines the work for compliance. A second inspection will then be required.

In accordance with MWS policy, the Metro Department of Codes Administration shall have jurisdiction within private property.

Call the MWS Permits Office at 615-862-7225 with questions regarding the inspection process for the meter and meter box.

PROCESS END

Once all items are installed correctly and pass inspection, MWS Permits Office releases its portion of the use and occupancy (U&O) building permit.

Appendix 1
Request for Water and Sewer Availability Form

Please photocopy this form for repeated use.

Date _____

Name of person requesting study _____

Address of person requesting study _____

Office or other daytime phone # _____

Owner, if different from above _____

Address of property _____

Purpose of construction/ intended use _____

Subdivision or PUD # _____

Building permit #, if available _____

Sq footage of proposed building _____

Projected wastewater flow (in GPD) _____

Finished floor elevations _____

Site utility plan included _____

Fire service type and size _____

Engineering/Surveying/ Design Firm _____

E/S/D firm phone number and contact person _____

This form is provided as an aid for the public in requesting a letter of availability for water and/or sewer for property owned by Metro Water Services.

Please note that the study will take approximately 15 working days to complete.

» Please enclose a check for $50 made payable to Metro Water Services for the study.

Please address all correspondence to:

Metro Water Services
Development Services
Attn: Availability Request
1600 2nd Ave. N.
Nashville, TN 37208

For assistance or additional information, please contact MWS Development Services at 615-862-4578.

Appendix 2
Construction Plan Review Checklist

Please photocopy this form for repeated use.

This checklist may be helpful in determining if your plans have all the information required by MWS and contains a list of some of the documents and/or agency approvals that may be necessary prior to final approval by the department.

Project Name: _____ **Project No.:** _____

	Yes	No
Plan size standard 24" x 36" (no other size accepted)		
Availability requested/answered		
Sewer capacity available		
Water pressure/volume adequate		
Easement(s) provided for adjacent property in the drainage area		
Easement(s) obtained and indicated on plan		
State highway permit		
TVA permit		
Railroad permit		
Corps of Engineers permit		
Streets names		
Private streets/open space – indicated as public utility easements		
Engineer's stamp on each plan sheet – signed and dated		
Location map		
Map and parcel numbers		
Site plan (requires entire property)		
Sewer service tees indicated for each lot – no bends (from main to ROW)		
Sewer sized for drainage area		
Existing utilities shown		
Sufficient topography shown		
Adequate cover (for sewer, 4' in street/pavement, 30" private property)		
Pipe material indicated		
Future extension considered		
Attached plan notes correct		
Water mains located 5' inside curbs		
Water meters located 25' from property corners		
2" blow off valves indicated at ends of water main (6" & 8")		
1" blow off valves at end of 3" PVC water main		
Bench mark, must be based on USGS datum		
Valving correct		
Plat received/bond set		
Proper scale – less than 600' – 1" = 20'		
Proper scale – more than 600' – 1" = 50'		
Drainage conflicts – storm pipes/creeks/etc.		
Water main to end within pavement		
No sewer lines or manholes located on property lines		
Ductile iron pipe Class 52 used if depth exceeds 15' (sewer) or grade exceeds 19%		
10 foot separation between water and sewer lines		
Fire hydrants spaced at 500' intervals, with 250' coverage		
Sanitary sewers located in the center of road when possible		
Provide as-builts to MWS Engineering Review Section (hard copy and digital formats)		
Provide owner's name, address and phone on cover sheet of construction plans		

Appendix 3
Standard Plan Notes

1. All water and sewer construction shall be in accordance with specifications and standard details of the Metro Water Services.
2. The contractor is responsible for reimbursing the Metro Water Services the cost of inspection.
3. The contractor is to provide and maintain the construction identification sign for private development approved.
4. After completion of the sanitary sewer, the developer is responsible for the televising of the lines prior to final acceptance. The videotaping must be coordinated with the Metro Water Services Inspection Section. All costs will be borne by the developer.
5. All connections to existing manholes shall be by coring and resilient connector method.
6. Reduced Pressure Backflow Prevention Devices (RPBP) or dual check valve will be required on all test and fill lines (jumper) needed for water main construction and must be approved by the Metro Water Services.
7. All water meter registers shall be a minimum of 24″ not to exceed a maximum of 28″ below finished grade.
8. Upon completion of construction of water and/or sewer, the engineer shall provide the department with a complete set of as-built plans on moist erasable mylars in reverse and in digital (*.dwg) format. Sewer plans shall be sealed by a licensed professional engineer or a registered land surveyor and shall include actual field angles between lines, all actual service lines and tee locations, the distance of the end of the service line to property corners and lines and/or station and offset from sewer centerline to end of service line, the depth to the top of the end of the service line, and shall reflect all alignment and grade changes. Water line plans shall be sealed by a licensed professional engineer or a registered land surveyor and shall include offset distance from the roadway centerline, or property line right of way, line depth, locations of hydrants, valves, reducers, tees and pressure reducing devices where applicable. All drawings must be completed and submitted prior to acceptance of the sewers or water mains into the public system and any connections being made.

Appendix 4
Application for Service/Permit

For Customer Service Use Only

Account Number		Meter Number	
Cycle		Meter Size	
Route		Permit Processor	
Permit Number		Map and Parcel	

Please photocopy this form for repeated use.

THE METROPOLITAN GOVERNMENT OF NASHVILLE AND DAVIDSON COUNTY
METRO WATER SERVICES
CUSTOMER SERVICE CENTER

PLEASE PRINT FILL IN ALL BLANKS

Owner Name: _____
Last, First, Middle

Telephone Number: (H) _____ (O) _____

Service Address: _____
Number Street

_____
City State Zip Code

_____ _____ _____
Lot No. Residential Commercial

_____ _____ _____
New Split Connection Discontinued

( ) Right ( ) Left ( ) Corner

Mailing Address: _____
Number Street

_____
City State Zip Code

Plumbing Company Name: _____ Plumber's Phone No.: _____

_____
Plumber's Name (PRINT) Plumber's Signature License No: Date

**Meters will be inspected ten working days after permit is issued. Additional inspections may result in cost of service fees.*

Appendix 5
Automatic Meter Reading Information

The Sensus RadioRead™ Meter Transceiver Unit (MXU)*

* Information provided to MWS by the vendor, which is wholly responsible for its accuracy.

Application

The Sensus RadioRead Meter Transceiver Unit (MXU) is a radio signal interface device that permits off-site meter reading via radio signals. The MXU interfaces any compatible absolute encoder equipped utility meter with a Sensus RadioRead interrogation device. The MXU is used for both inside and pit-set utility meter installations to provide safe, off-site meter reading. It eliminates a number of meter reading problems such as lockouts, entering unsafe meter vaults, "curb side" reading estimates, estimated billing and errors associated with manual meter reading methods.

The Sensus MXU Model 505 provides the industry's only two-port radio interface device. In addition to the two-port design, the Model 505 is compatible with the Sensus MultiRead™ Module that permits up to four to eight meter connections per MXU port. This feature provides enhanced cost effective AMR where multiple meter installations exist.

RadioRead Operation

When used with a Sensus handheld or vehicle interrogation unit, the Sensus RadioRead system provides two-way communications between the reading unit being used and system equipped utility meters. The MXU connected to the meter receives an activation wake up signal from the interrogation unit. The MXU then obtains the meter's absolute encoder identification number and meter reading, which are transmitted back to the interrogation device. Diagnostic data such as battery strength is also transmitted. After the interrogation unit receives valid data, it transmits an acknowledgment signal back to the MXU, which returns it to the power down mode. This helps maintain battery life and also optimizes the efficiency of the system by eliminating unnecessary radio transmissions.

RadioRead Integrity

When interfaced with an absolute encoder, RadioRead system meter reading is virtually free of errors. The readings are made from the actual positions of the encoder's odometer wheels at the time the reading is made to ensure valid up-to-date readings. Any errors or non-reads are immediately indicated on the meter reading equipment. This information can also be generated on management reports when the data is down-loaded at the end of the reading cycle. In addition, high/low reading parameters can also be verified during the meter reading process.

Programmability

For special meter reading applications such as commercial routes and multi-utility installations, the MXU can be programmed to only respond to utility defined class and password codes. The MXU can also be reprogrammed to transmit in one-way mode for use in some fixed base systems.

TouchRead System

The MXU has built-in connections for optional hookup to TouchRead System sensors. Use the TouchRead options as a reading back-up or for making visual readings, if desired. The hookup is not compatible for use with the Schlumberger Proread protocol.

Replacement Battery

The lithium manganese dioxide battery provides long service and is the industry's first replaceable battery cartridge system. This design provides fast, easy battery replacement. The battery is made of materials shown to have significantly less toxicity compared to those used in other brands to minimize the environmental impact of used battery disposal.

Installation

The MXU can be installed in either meter pits or vaults, or inside buildings. A mounting bracket is available for installations requiring mounting on vertical walls. Wire connections are made using 3M gel cap splicing kits to ensure dependable MXU operation in damp, wet conditions such as inside meter pits or vaults that may be subject to flooding.

MultiRead™ Module

A compatible module that permits up to four or eight connections per MXU post.

Appendix 6
Who To Call Guide

Metro Water Services

Central Laboratory
- *Water Quality* 862-4591

Communication Services 862-4494

Customer Service Center 862-4600
- *Service Changes*
- *Billing*
- *Customer Concerns*
- *IVR payments/inquiries*

Cross Connections 862-4563

Emergency Services 862-4600
- *Leak in Street/Meter Box*
- *Sewer Overflow*

Development Services/Engineering
- *Construction Plans Review* 862-4574
- *Construction/Inspections* 862-4555
- *Engineering Records* 862-4564
- *Sewer Capacity Study* 862-4578

Environmental Compliance 862-4590

Permits/Customer Connections 862-7225
- *Water/Sewer Tap Scheduling*
- *Tap Inspection*
- *Meter Box Inspection*

Stormwater 862-4600

Other Metropolitan Agencies

Fire Marshall 862-5230

Codes Department 862-6500

Metro Development and Housing Authority (MDHA) 252-8400

Public Works 862-8700

Additional Numbers

BellSouth 557-6500

Comcast Cable 244-5990

Nashville Gas 734-0665

NES 736-6900

Tennessee Department of Transportation 741-3196

Tennessee One Call 366-1987

Tennessee Valley Authority 780-3800

Appendix 7
Glossary

Availability Letter
A letter issued by Metro Water Services after receiving developer payment of capacity fees that confirms water service elevations, water main size, and sewer availability/capacity

Capacity Study
A study to determine projected sewer flow for a proposed development and/or business including capacity fees applicable to the proposed development

Capacity Fee
A fee charged to reserve sanitary sewer capacity for proposed developments

Contractor
One who agrees to furnish materials and/or construction services for an agreed price

Developer
One who develops real estate for residential or commercial purposes

Developer's Equity
Equity for developer's construction of sewer/water main extension after such has been deeded to MWS with amount based on the contractor's certificates of cost showing the charges for the construction

Easement
A right, given to a person or agency, to make limited use of real property owned by someone else

Lay and Deed
Public water and/or sewer mains constructed and paid for by an individual or developer other than Metro Water Services. After construction these are conveyed by deed to the Metropolitan Government to be owned and maintained

Licensed Utility Contractor
A contractor approved and licensed by the State of Tennessee

Metro Water Services
The Department of Water and Sewerage Services of the Metropolitan Government of Nashville and Davidson County

Run-to-Curb
Water service installed from the public main to the property line or right-of-way

Right-of-Entry
Notification executed by each property owner affected by public water or sewer construction

Sewer Connection
Point of entry by new tap or connection to an existing lateral service

Transfer Slips
Slips that must be submitted prior to issuance of permits that convey a developer's equity to the current property owner

Water/Sewer Tap Fees
A privilege fee paid to MWS prior to connection to MWS distribution system

Requests for ADA accommodations should be directed to:

ADA Coordinator
Metro Water Services
1600 2nd Avenue North
Nashville, TN 37208-2206
(615) 862-4862

METRO
WATER SERVICES

The Mission of Metro Water Services:

To provide drinking water, wastewater treatment and stormwater management services to our community so we can enjoy a vital, safe and dependable water supply and protected environment.

www.nashville.gov/water
(615) 862-4600

METRO
WATER SERVICES